

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***CM44 transmitter with CPS11E pH Sensor***

Manufactured by:

### ***Endress+Hauser Conducta GmbH+Co. KG***

Dieselstraße 24  
D-70839 Gerlingen  
Germany

has been assessed by CSA Group  
and for the conditions stated on this certificate complies with:

**Performance Standards and Test Procedures for Continuous Water  
Monitoring Equipment, Part 2: Performance standards and test procedures for on-line  
monitors, Environment Agency, version 3.1, August 2010**

Certification range:

pH units: 2 to 10

Project No.: 80205262  
Certificate No: CSA MC140246/04  
Initial Certification: 02 April 2014  
This Certificate issued: 26 March 2024  
Renewal Date: 01 April 2029



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Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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## Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes available at [www.mcerts.net](http://www.mcerts.net)

On the basis of the assessment this instrument is considered suitable for use on treated wastewater, untreated wastewater and receiving water applications.

## Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

Sira Report 16W24440 dated 06/02/2014.

## Product Certified

The measuring system consists of the following parts:

- CM44 transmitters (including models CM442, CM444 and CM448)
- CPS11E pH sensor

This certificate applies to:

- CM44 transmitters with firmware version V01.00.00-0004 (serial number D60B1A05G00 onwards)
- CPS11E sensors with firmware V0.00.48

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: 0 to +50°C  
 Sample Temperature Range: 0 to +80°C

Results are expressed as error % of 2 to 10 pH units, unless otherwise stated.

Test	Results expressed as pH units				Other results	MCERTS specification
	<0.05	<0.1	<0.2	<0.5		
Combined performance characteristic A glass B glass			0.17 0.19			0.3 pH units
Warm up time					<2 mins	Value to be reported
Response time					6 s	Value to be reported
Mean Error A glass B glass			-0.14 -0.16			0.2 pH units
Linearity A glass B glass	0.04 0.03					0.1 pH units
Repeatability A glass B glass	0.02 0.02					0.1 pH units
Drift A glass B glass	0.01 0.01					0.1 pH units
Output impedance (0-500Ω)	0.00					0.05 pH units
Supply voltage (18V to 36V, 85V to 265V)	0.00					0.05 pH units
Ambient temperature (0 to 50°C)	0.03					0.1 pH units
Relative humidity (50°C >95%RH)	0.05					0.1 pH units
Sample temperature (0 to 80°C) A glass B glass	0.05 0.05					0.1 pH units

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Test	Results expressed as pH units				Other results	MCERTS specification
	<0.05	<0.1	<0.2	<0.5		
Sample flow rate (0-2.3m/s, conductivity 10-5000 µS/cm)	<0.01					0.05 pH units
Sample pressure					Note 1	0.05 pH units

Note 1: Instrument is suitable for use at atmospheric pressure only.

### Field test results

The field trial was conducted > 3 months on the final effluent of a wastewater treatment works

Test	Results expressed as pH units				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Error under field conditions					96%	>90% of errors ≤ U <sub>c</sub> value
Response time (start)					8 s	To be reported
Response time (end)					8 s	To be reported
Up-time					100%	>95%
Maintenance	No maintenance required during field trial					

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## Description

The Liquiline CM44 and associated sensor, the CPS11E, have been developed specifically for the digital Memosens technology pioneered by Endress+Hauser.

Memosens technology offers many benefits over and above standard analogue technology including:

- Maximum process safety through contactless inductive signal transmission
- Data safety through digital data transmission
- Easy handling thanks to storage of sensor-specific data, including calibration data, in the sensor
- Predictive maintenance possible thanks to registration of sensor load data in the sensor

The Liquiline CM44 is an extendable multiparameter transmitter for monitoring and controlling processes in both process industry and the environmental industry. It is available with up to 8 input channels, each capable of accepting any Memosens digital sensor. The transmitter is common with the Endress+Hauser Automatic Stationary Samplers, the Liquistation CSF33 & CSF48, which are both subject to a separate MCERTS Product Conformity Certificate.

The measurement signals can be linked by mathematical functions and new measured values calculated. The transmitter is also available with up to 8 analogue outputs. The transmitter has data logging capabilities, in the form of logbooks, to capture information regarding the measurements in a user selectable format. The stored data can be downloaded by a variety of methods.

Also available are options for digital fieldbus communications such as HART, Profibus, Modbus (RS485/TCP), and an integral web server for Ethernet connectivity. Cleaning functions and a variety of controller and alarm relays can also be selected, along with analogue inputs for processing measured values from other types of device such as flow or level monitors.

The modular transmitter design means the CM44 can be adapted and expanded to suit your needs, and can be supplied with optional M12 sensor connectors, suitable for any Memosens sensor.

Nomenclature of the transmitter varies and is dependent on the number of input channels selected, as follows:

CM442 - either 1 or 2 input channels - up to 2 sensors can be connected simultaneously

CM444 - either 2 or 4 input channels - up to 4 sensors can be connected simultaneously

CM448 - 2, 4, 6 or 8 input channels - up to 8 sensors can be connected simultaneously

The CPS11E is the standard sensor produced by Endress+Hauser, and is the sensor normally selected for environmental applications. It utilises the potentiometric method, to provide a stable, reliable measurement with long term stability.

The CPS11E sensor has a large dirt repellent PTFE ring diaphragm that prevents blockages and assures long term stability and accuracy, whilst reducing maintenance. An integrated Ag/AgCl reference system which serves as a reference electrode is part of a double junction system which provides a long electrode poison diffusion path.

The sensor is also available with a choice of glasses for differing applications, optional built in temperature sensors for effective temperature compensation, an optional ion trap, and a variety of hazardous area approvals.

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The inclusion of the integrated electronics in the sensor head enables calibration data to be held within the sensor, which allows the sensor to be calibrated off-line in ideal conditions, and then quickly and easily put into service as required. All calibration data is automatically transferred to the transmitter and used to provide the measured value. The integrated electronics within the sensor head also stores historical information such as operating hours, max and min measurements and calibration dates. This assists in providing information for determining process changes, projected sensor life and predictive maintenance.

A range of cleaning systems, controlled by the CM44 transmitter, and installation options (insertion, suspended and retractable) are all available.

### General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of CSA Certificates'.
2. The design of the product certified is defined in the CSA design schedule V09 for certificate No. CSA MC140246/04.
3. If the certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.
4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Certificates'.
5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.

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